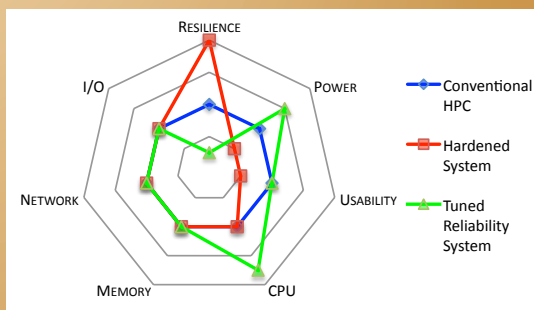


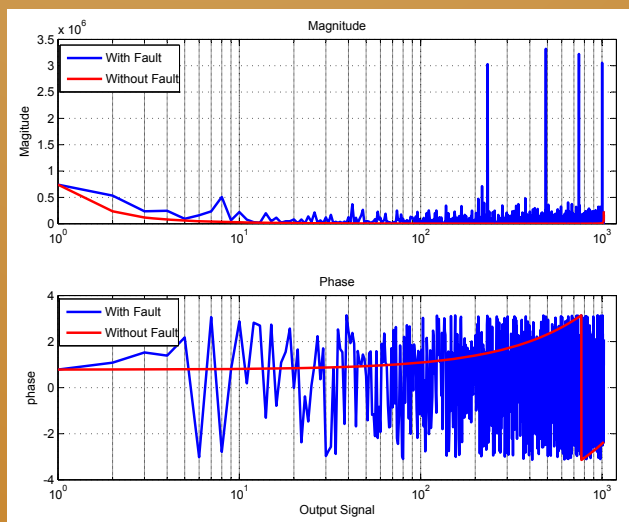
USRC

Experimental Framework for Injecting Logic Errors in a Virtual Machine to Profile Applications for Soft Error Resilience

GOAL: Understand an application's tolerance to soft errors to influence application and system design



APPROACH: Virtual machine processor emulator, QEMU, modified to inject simulated soft errors into the opcodes issued by applications in the VM. Can target specific applications for easier testing.



A single faulty multiply opcode (random bit flip) in an FFT code causes radically different output.

SEFI – Soft Error Fault Injector

Nathan DeBardleben, ndebard@lanl.gov
Sean Blanchard, seanb@lanl.gov

Qiang Guan, Ziming Zhang and Song Fu
U. North Texas Dependable Computing Systems Lab